Office of Law Enforcement Standards (OLES)

NIST & Law Enforcement

Technology Partnerships for Public Safety and Security

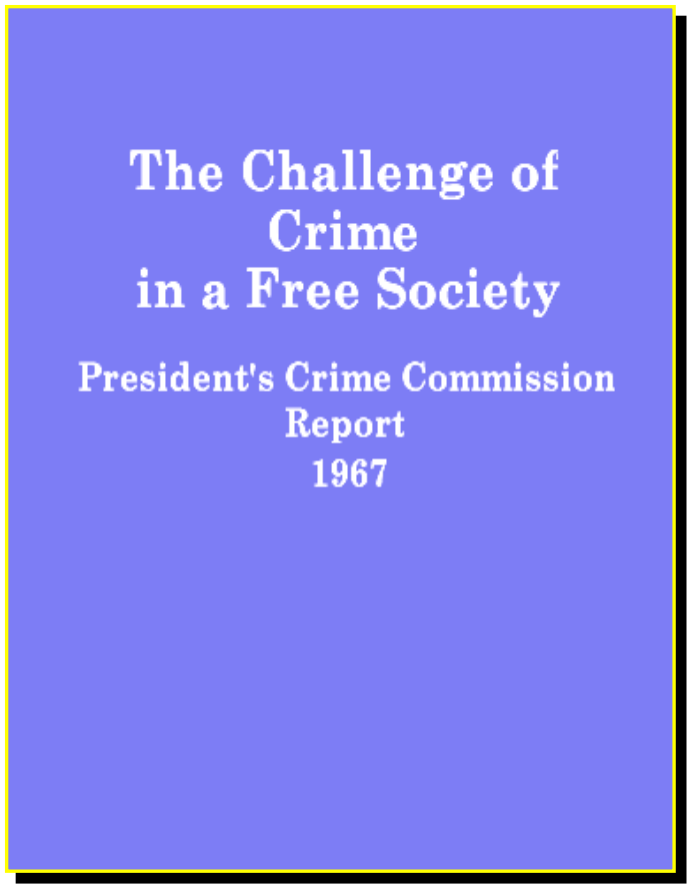
A Presentation for
the Visiting Committee on Advanced Technology

Kathleen M. Higgins

Director
Office of Law Enforcement Standards

- Founded in 1901
- Original U.S. Federal Crime Laboratory

OLES Created in Answer to:



Commission Findings:

- **Law Enforcement inadequately equipped**
- **No reliable information available about products or equipment**

OLES Created Through:

Congressional Directive
to Department of Justice

Agreement between
Department of Justice &
Department of Commerce

Office of Law Enforcement Standards (OLES)

Mission is to develop:

Standards
Test Methods & Procedures
Technical Reports
User Guides

for equipment and technologies used by the Law Enforcement & Public Safety Communities

... and to provide technical advice and assistance

Matrix Management Organization

- Receive Technical Challenges
- Assemble Teams & Resources

Office of Law Enforcement Standards (OLES)

5 Core Program Areas:

- Weapons and Protective Systems
- Detection, Inspection and Enforcement Technologies
- Chemical Systems and Materials
- Forensic Sciences
- Public Safety Communications Standards

Office of Law Enforcement Standards (OLES)

Achievements:

- **230+** published standards, guides and technical reports
- Participation in **dozens** of standing and ad hoc organizations, including:
  - *ISO TAG on Personal Protection Equipment*
  - *British Standards Institute's 5 Personal Protection Working Groups*
  - *NATO's Task Group on Behind-Armor Blunt Trauma*

Office of Law Enforcement Standards (OLES)

OLES' support of the National Institute of Justice's (NIJ's) Body Armor Certification Program has directly contributed to saving

2500+

lives.

Law Enforcement Needs

BASICS

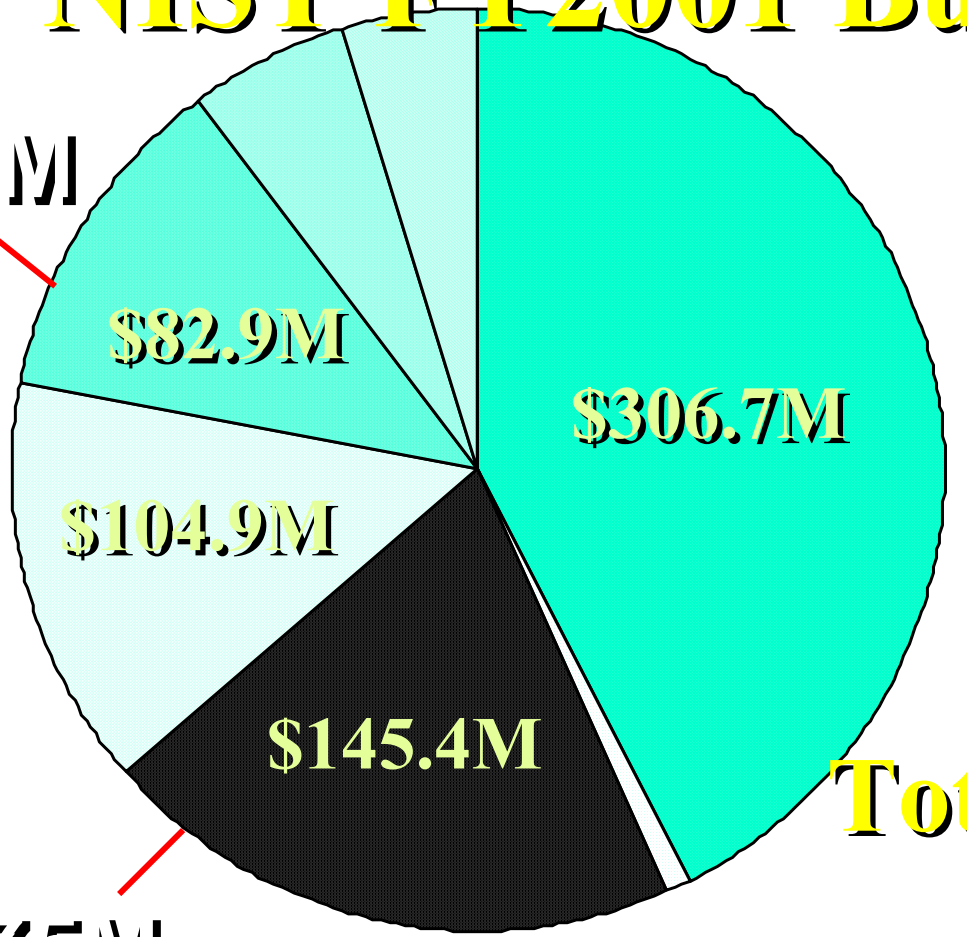
Handcuffs, gun holsters, vehicle sirens,
traffic enforcement equipment, etc.

NEW TECHNOLOGIES

TO RESPOND TO:

Computer Crime
Challenges to Ballistics & DNA Evidence
Weapons in Schools and Work Places
Terrorism & Weapons of Mass Destruction

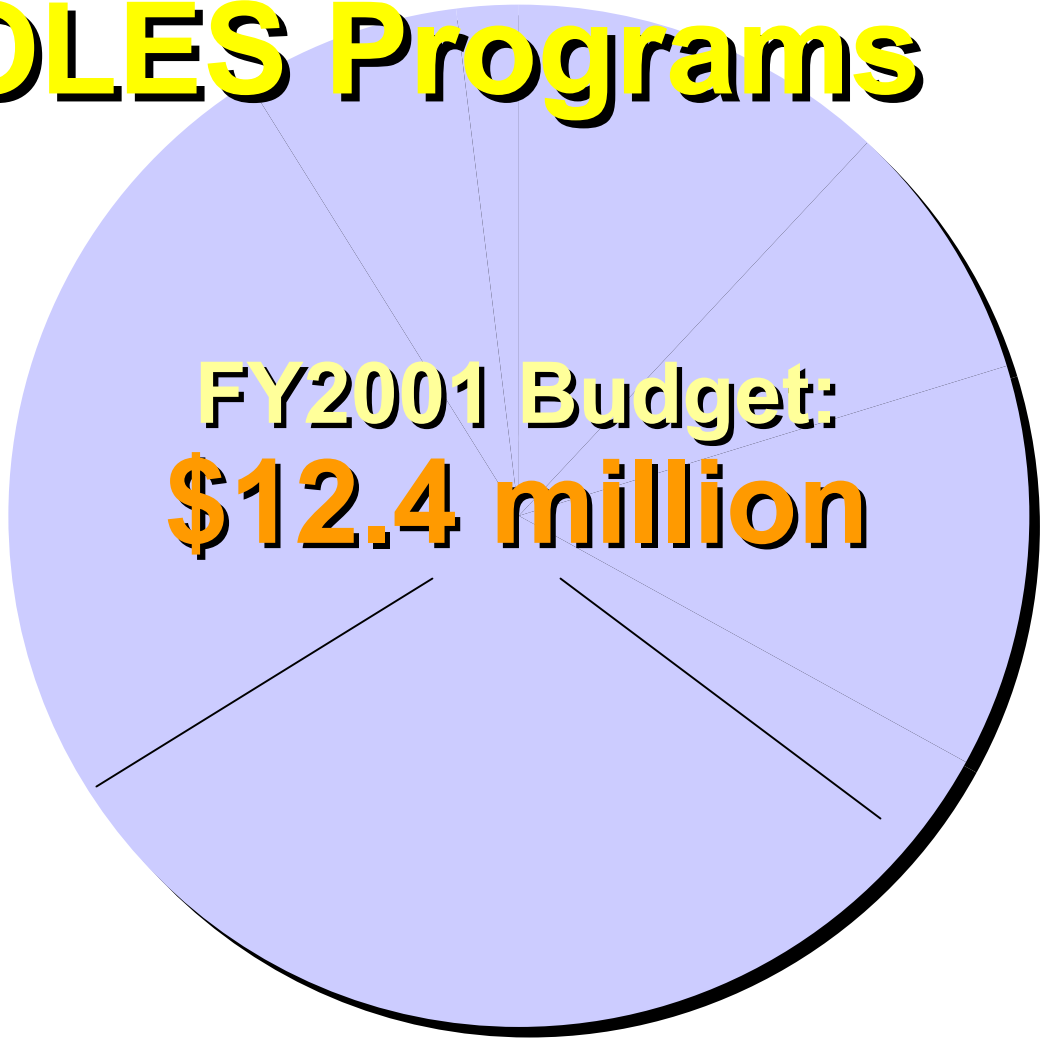
NIST FY2001 Budget



Total: $720M

Law Enforcement: $53.4M

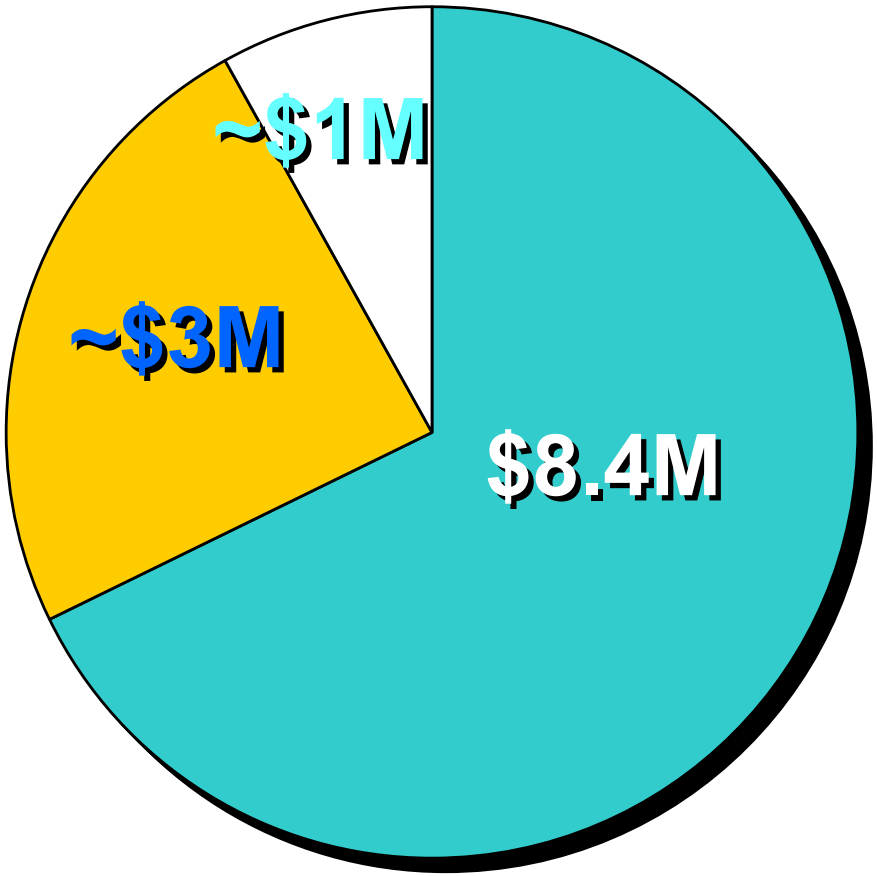
OLES Programs



100% Dedicated to Law Enforcement and Public Safety Programs

100% Funded by Outside Agencies (OAs)

OLES Sponsors



- NIJ
- Other Sponsors
  - FAA
  - NHTSA
  - BATF
  - USFA
  - DCFL
- Indirect NIJ Funding
  - MIPT
  - TSWG
  - NCFS
  - FBI
  - Marshall U
  - UWVa

SETTING PRIORITIES

LECTAC

Law Enforcement and Corrections Technology Advisory Council provides guidance

NIJ NATIONAL INSTITUTE OF JUSTICE

International Association of Chiefs of Police consults

IACP

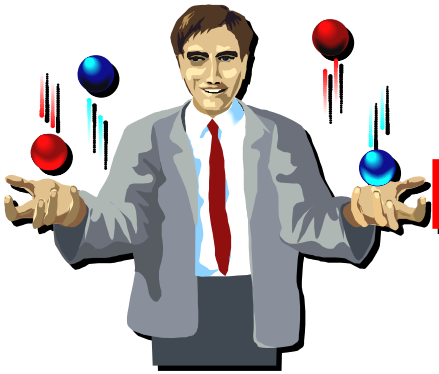
Assists NIJ's OST in Developing its Strategic Plan

Component of OST's Product Implementation Process

Provides Input on Emerging Technologies

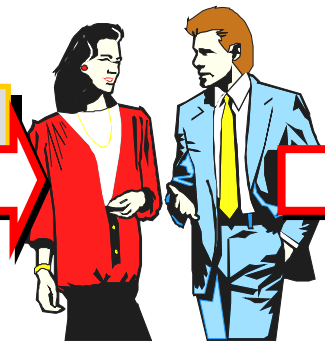
Program Life Cycle (1)

Planning & Preparation

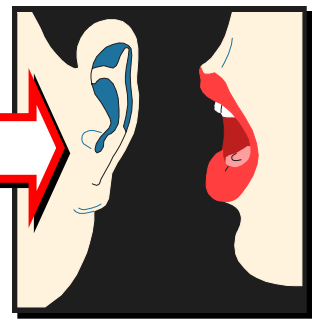


Select OLES Program Manager (PM)

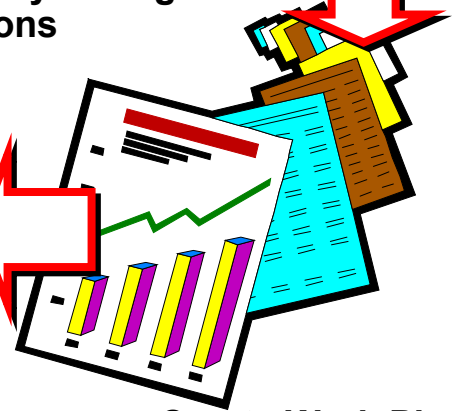
Select Principal Investigator (PI)



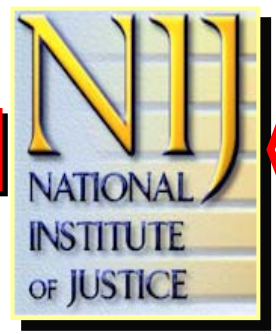
PM & PI Preliminary Discussions



Verbal Agreement

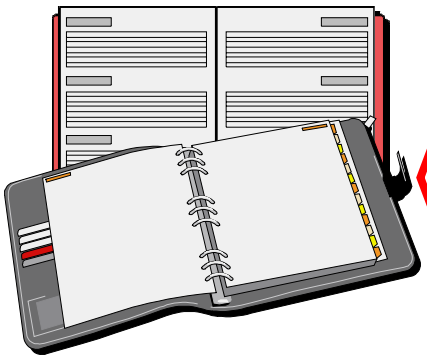


Create Work Plan & Milestones



Sponsor Review of Plan

Transfer of Funds to NIST/EEEL/OLES

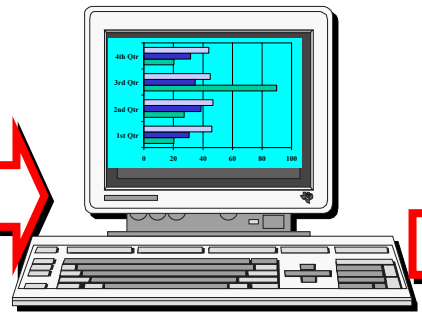


Detailed Planning & Scheduling

Program Life Cycle (2)

Work Performance & Management

Regular Discussions between PM and PI Teams



Submission & Review of PI's Quarterly & Monthly Status Reports

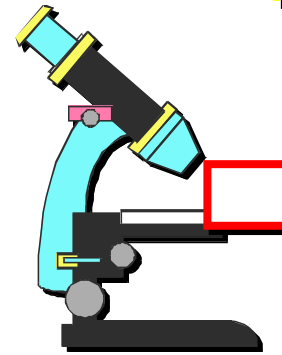
OLES Director Meets as needed with PM and PI Team Leaders

OLES Director Submits Quarterly Reports to NIJ

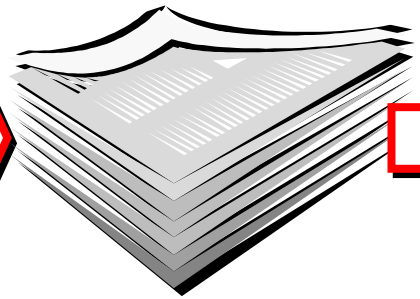
OLES Director Meets with NIJ & NIST Management as needed

Program Life Cycle (3)

Work Completion & Publication



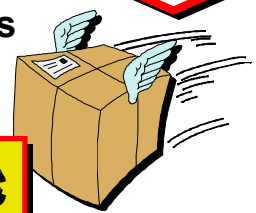
R&D Completed



Draft Standard/ Report/ User Guide Submitted by PI

OLES Reviews Draft

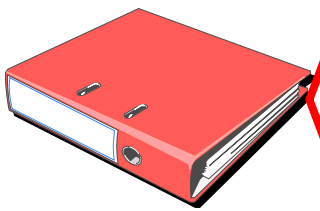
Draft Returned to PI for Clarifications/ Additions



Draft Sent Out for Expert & User Review

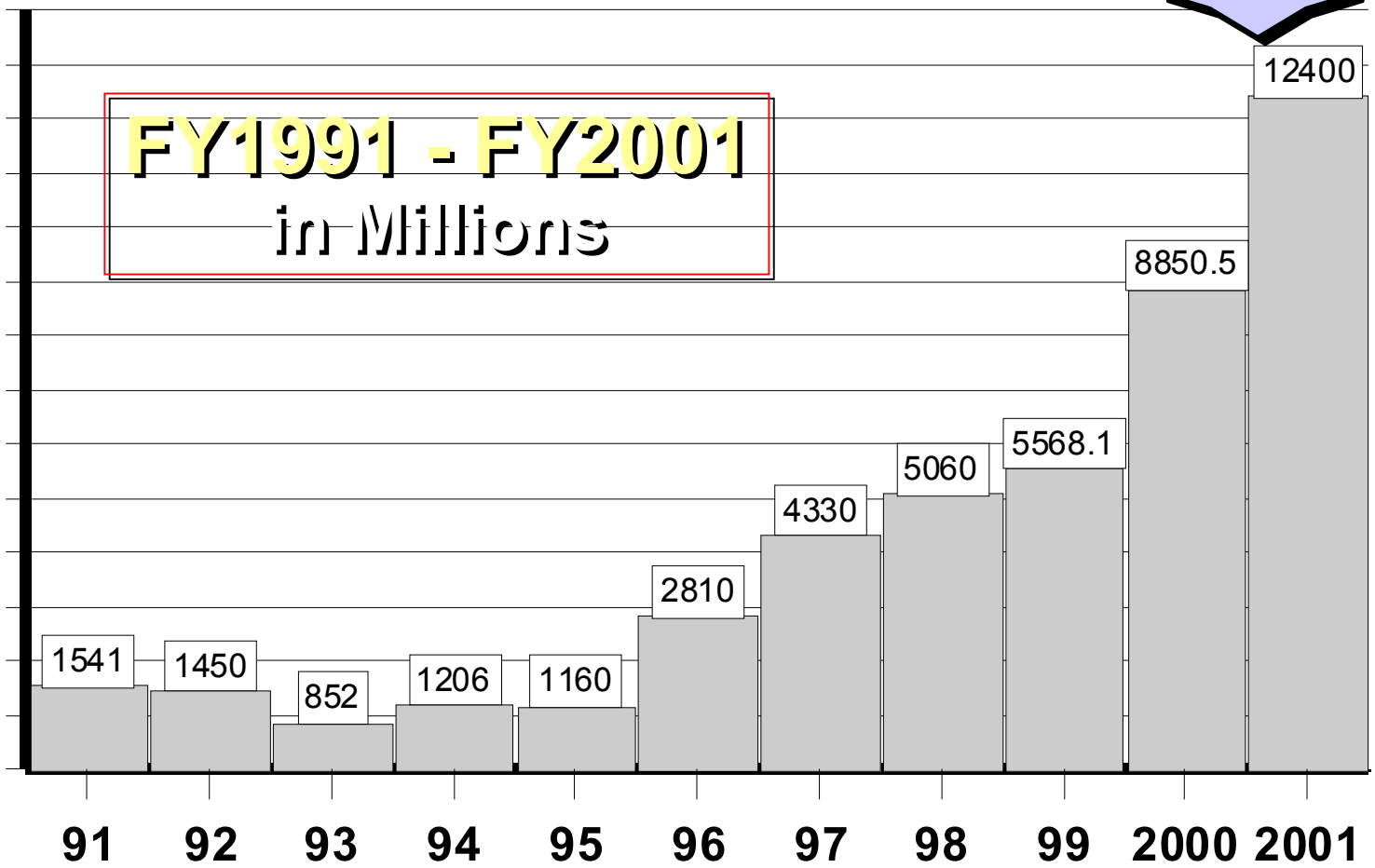
Revisions Made to Incorporate Comments of Merit

High-Level NIST & NIJ Reviews



Publication & Distribution

OLES Funding



Organization

Director
Kathleen Higgins

Special Assistant
Thomas Russell

International Relations
Alim A. Fatah

Admin. Support Assistant
Sharon Lyles

Secretary/Office Automation
Marilyn Leach

Weapons & Protective Systems
Kirk D. Rice

Forensic Sciences
Susan M. Ballou

Detection, Inspection & Enforcement Technologies
A. George Lieberman

Public Safety Communications Standards

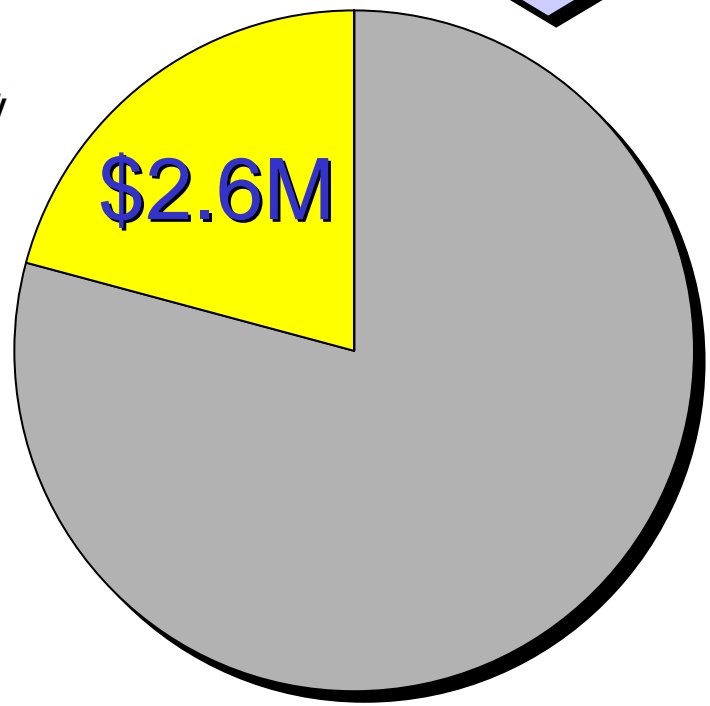
Testing/Ballistics Range

Chemical Systems & Materials
Alim A. Fatah

Engineering Technician
Nathaniel E. Waters

NIST Labs Supporting OLES Programs

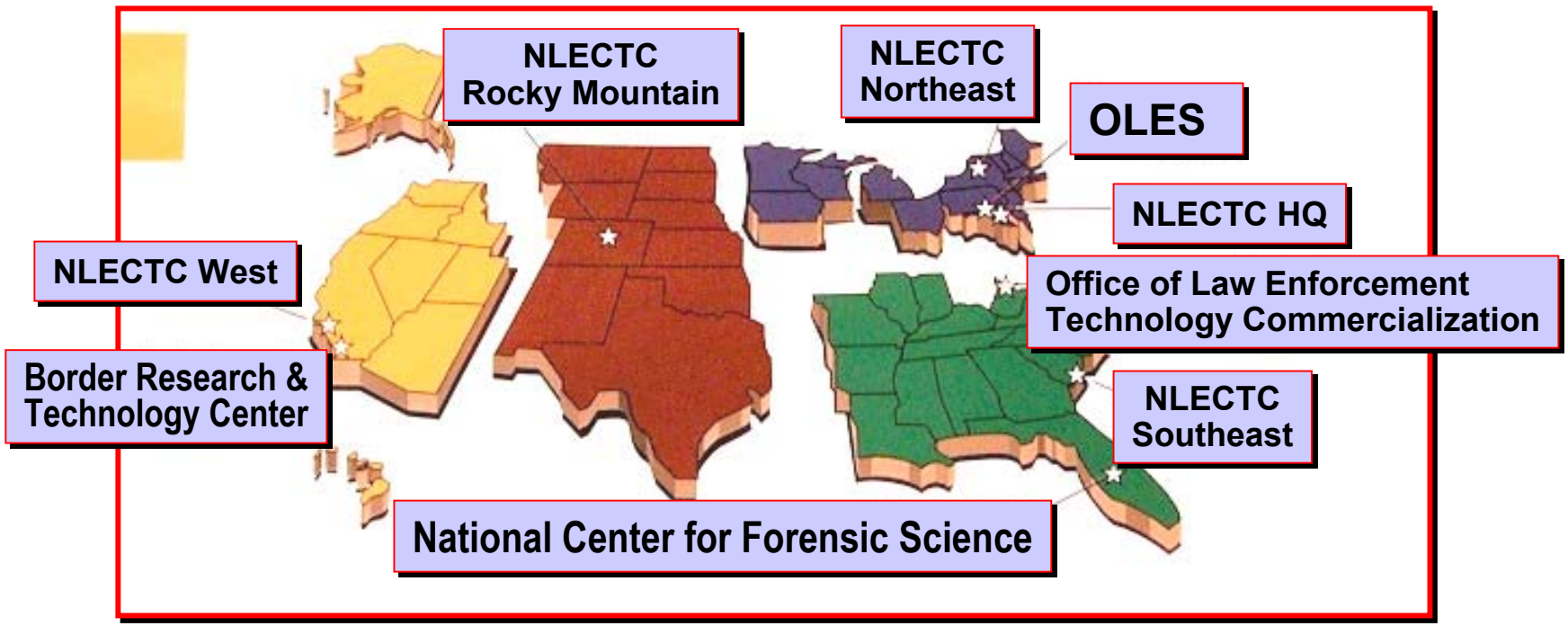
- Manufacturing Engineering Laboratory
- Chemical Science and Technology Laboratory
- Material Science and Engineering Laboratory
- Building & Fire Research Laboratory
- Information Technology Laboratory
- Electronics and Electrical Engineering Laboratory



Portion of OLES FY2001 Budget Funding Work Done by NIST Labs

OLES is an Active Member of:

National Law Enforcement and Corrections Technology Center (NLECTC)



OLES Professional Affiliations

- Optical Society of America
- Inter-Society Color Council
- American Chemical Society
- Illuminating Engineering Society of America
- American Society of Testing and Materials
- Canadian Society of Forensic Science
- International Association of Arson Investigators
- National Fire Protection Association
- International Association of Chiefs of Police
- American Academy of Forensic Sciences
- Canadian General Standards Board
- Mid-Atlantic Association of Forensic Scientists
- ISO Technical Advisory Group on Physical Protection
- European Commmittee on Standardization (CEN)
- NATO Research Group: Behind-Armor Blunt Trauma

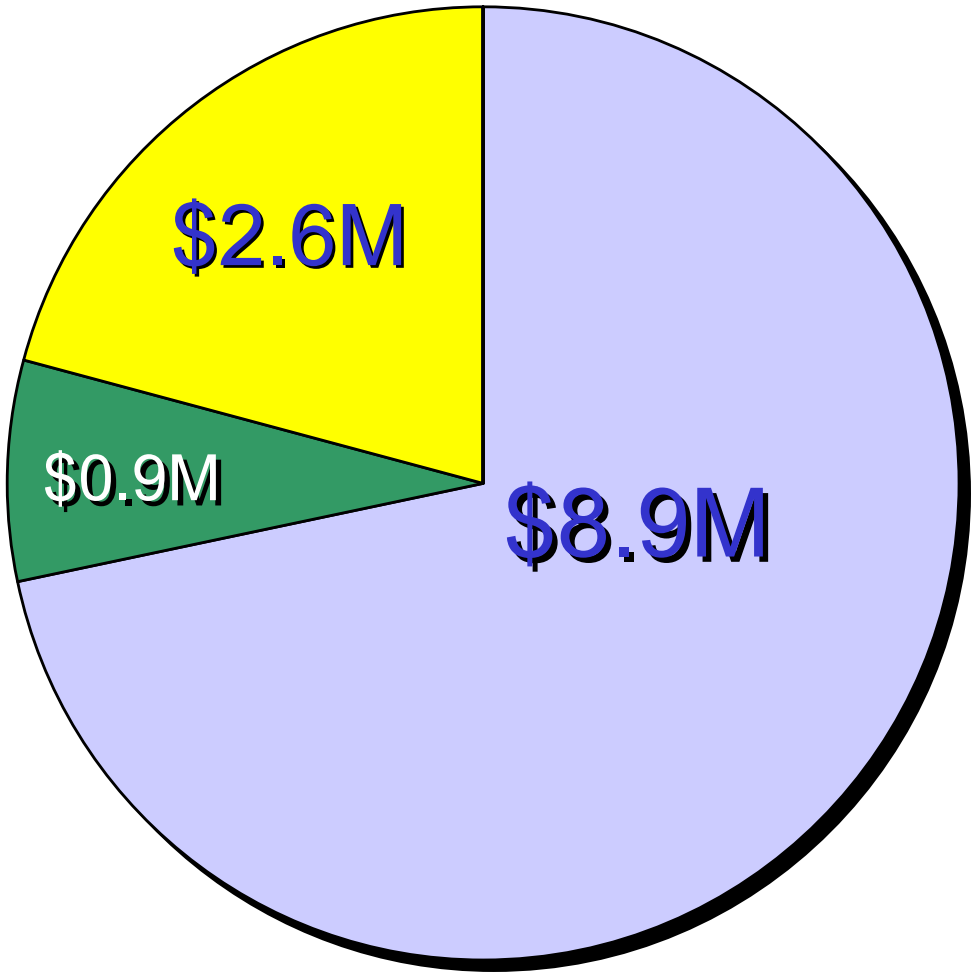
OLES Program Champions

- U.S. Secret Service
- Touchstone Research
- University of Virginia
- Armor & Protective Systems Working Group
- Police Scientific Development Branch, U.K.
- United States Army Aberdeen Test Center
- Office of Special Technology, Technical Support Working Group
- Police Scientific Development Branch, U.K.
- Royal Canadian Mounted Police
- FBI Engineering Research Facility
- Independent Testing & Consulting, Inc.
- DoD Computer Forensics Laboratory
- University of Utah, Center for Human Toxicology
- Institute of Surgical Research, Brook Army Medical Center

OLES Program Champions

- Institute for Social Analysis
- TASC, Inc.
- Institute for Telecommunication Sciences, Telecommunications and Information Administration
- National Cybercrime Training Partnership
- United States Army Soldier Systems Command
- University of Maryland at College Park Center for Automation Research
- U.S. Department of Justice National Domestic Preparedness Office
- U.S. Department of Justice Office of State and Local Domestic Preparedness
- University of Texas at Dallas, The School of Human Development

OLES FY2001 Budget Allocation



Funds Work Done by OA Champions

Funds Work Done by NIST Labs

Administration & Program Support

Weapons and Protective Systems

Focus

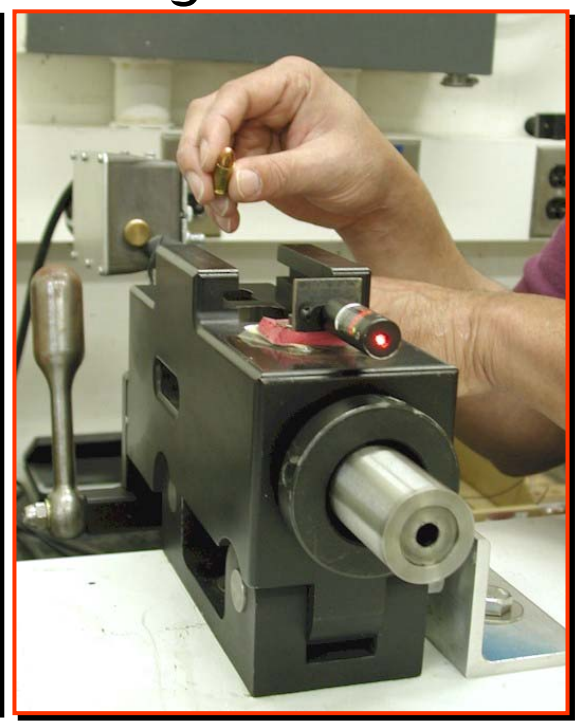
FY2001 Budget:
$864,000

- Ballistic-resistant materials, helmets and body armor
- Stab-resistant armor
- Riot helmets & face shields
- Handcuffs
- Protective gloves
- Armored cars
- Gun holsters
- "Smart" guns

Weapons and Protective Systems

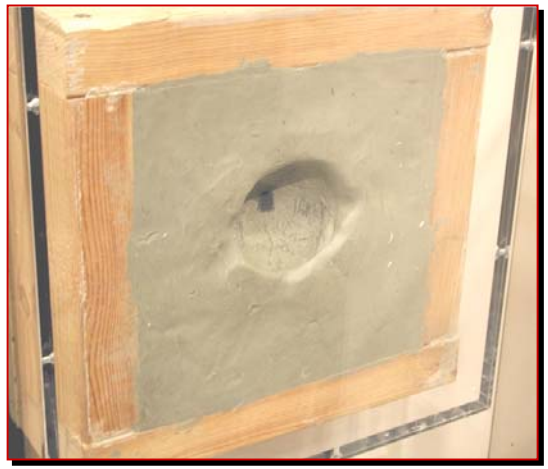
Research Test Facility

Does Ballistics Testing & Evaluation for
7 OLES Programs and for other Organizations

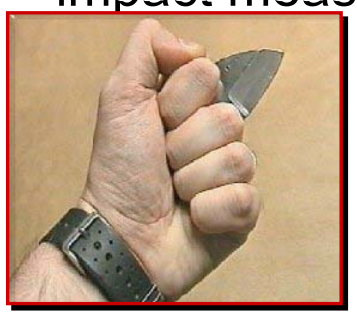


Weapons and Protective Systems

Improved Body Armor



- Two projects updating ballistic-resistance standard
  - Champions:
    The Tekne Group, Inc.,
    National Technical Systems, Inc.
    Electricity Division of EEEL
  - One is investigating electronic & opto-electronic impact measurement methods



- Two projects focusing on stab-resistance standard

Detection, Inspection and Enforcement Technologies

Focus

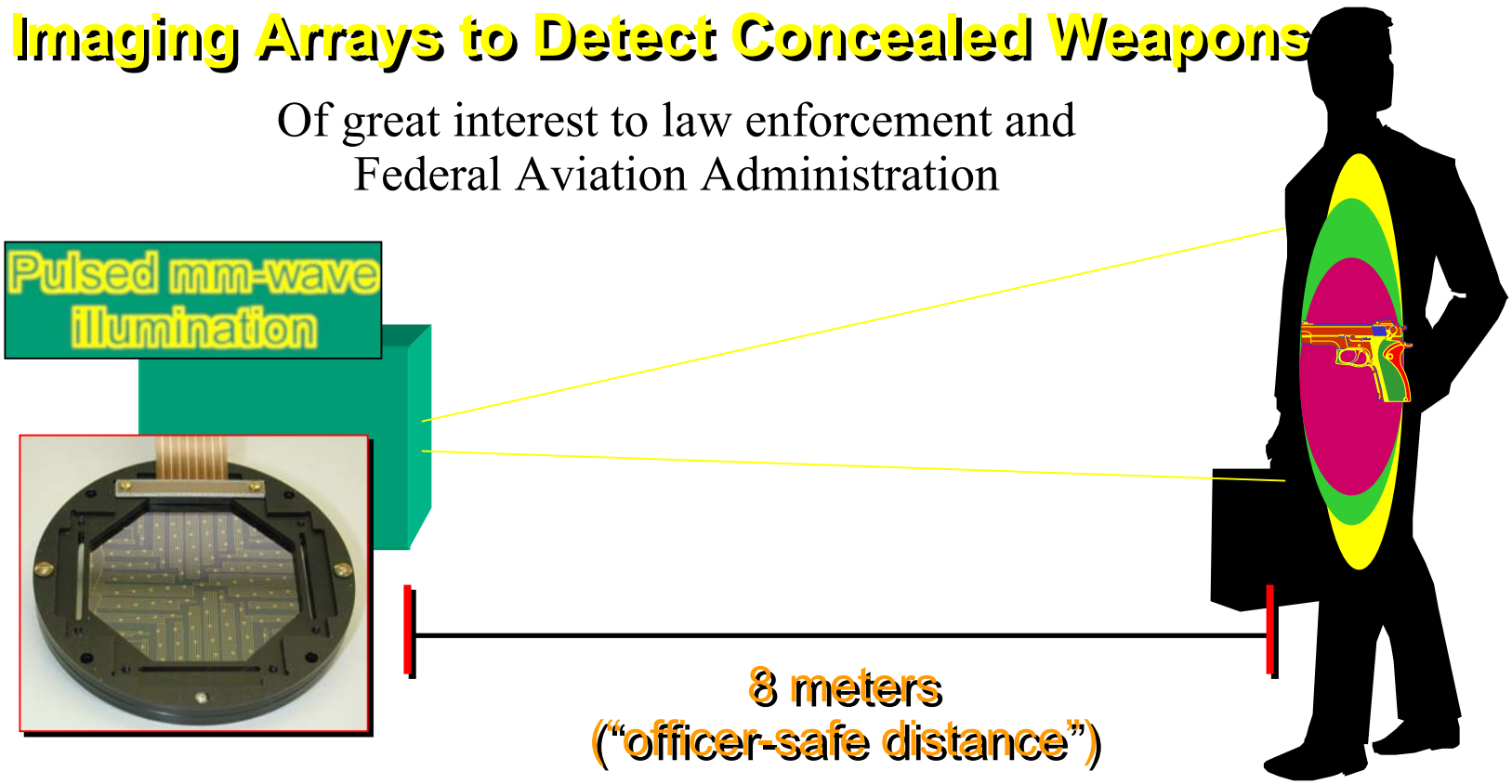
FY2001 Budget:
$1.3M

- Detection of Concealed Weapons and Explosive Devices
- Video Surveillance, Super-Resolution & Face Recognition Systems
- X-ray Systems for Bomb Disarmament
- Emergency Vehicle Lights and Sirens
- Speed Enforcement/Measurement
- Police Fleet Management

Detection, Inspection and Enforcement Technologies

2-Dimensional Monolithic Microbolometer Imaging Arrays to Detect Concealed Weapons

Of great interest to law enforcement and
Federal Aviation Administration



Chemical Systems and Materials

Focus

FY2001 Budget:
$4.1M

- Protective Clothing and Equipment
- Drugs of Abuse
- Less-than-lethal Technologies
- Weapons of Mass Destruction

Chemical Systems and Materials

Gun Powder Residues & Bullet Casings

Champion:

Chemical Science and Technology Laboratory & Manufacturing Engineering Laboratory

Pepper Spray & Canisters

Champion:

University of Utah
Center for Human Toxicology

Chemical Systems and Materials

Domestic Preparedness Against Terrorist Attacks

95% of Program Budget

1998 DoD & DoJ commission

InterAgency Board for Equipment Standardization & Interoperability

(IAB)

to develop & maintain

STANDARD EQUIPMENT LIST (SEL)

Essential Items for responding to

Chemical Biological Radiological Nuclear Explosive

terrorist attacks

IAB Standards Coordination Committee

NIOSH

NFPA® INTERNATIONAL

OFFICE OF LAW ENFORCEMENT STANDARDS
OLES

First Objective: Develop standards for CBRNE respiratory devices

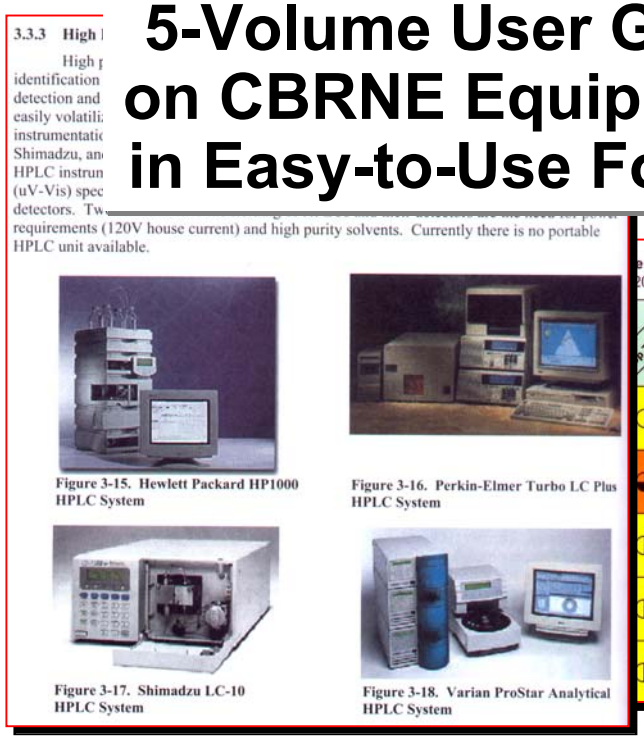
5-Year Interagency Agreements

- Identifying Baseline Hazardous Exposures
- Completing State-of-the-Art Chemical Laboratory
- Evaluating Existing Test Methods for Use as Standards Test Methods

Battelle

DTIC

5-Volume User Guide on CBRNE Equipment, in Easy-to-Use Format



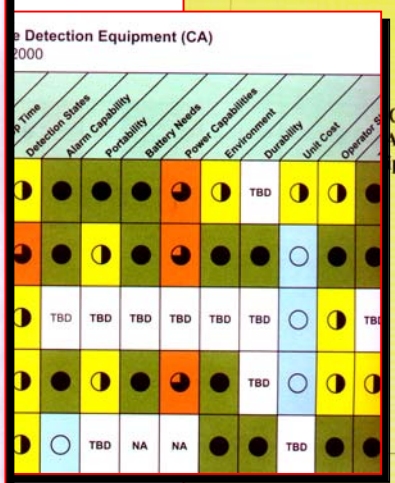
requirements (120V house current) and high purity solvents. Currently there is no portable HPLC unit available.

Figure 3-15. Hewlett Packard HP1000 HPLC System

Figure 3-16. Perkin-Elmer Turbo LC Plus HPLC System

Figure 3-17. Shimadzu LC-10 HPLC System

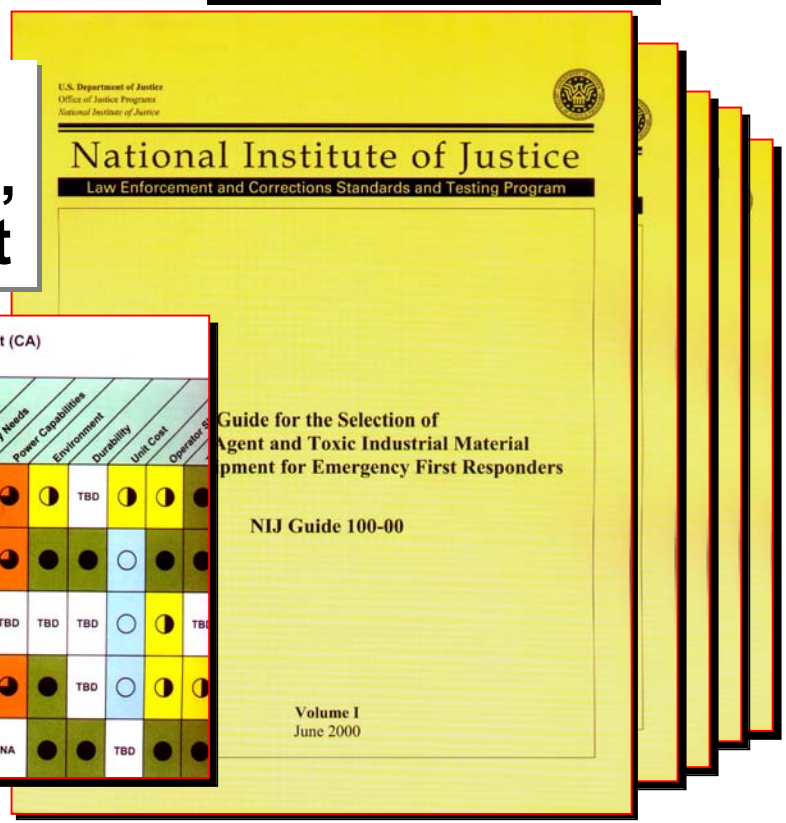
Figure 3-18. Varian ProStar Analytical HPLC System



Detection Equipment (CA)
2000

Detection States | Alarm Capability | Portability | Battery Needs | Power Capabilities | Environment | Durability | Unit Cost

TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | NA | NA | TBD



U.S. Department of Justice
Office of Justice Programs
National Institute of Justice

National Institute of Justice

Law Enforcement and Corrections Standards and Testing Program

Guide for the Selection of
Agent and Toxic Industrial Material
pment for Emergency First Responders

NIJ Guide 100-00

Volume I
June 2000

Computer-based Assessment Tool

- Three terrorist attack scenarios
- Probable agents & delivery systems
- Probable exposures

Forensic Sciences

Focus

FY2001 Budget:
$1.49M

- Software and Software Libraries
- Databases
- Detection of Drugs of Abuse
- Standards and SRMs
- Methods and Procedures
- Training and Education

Forensic Sciences

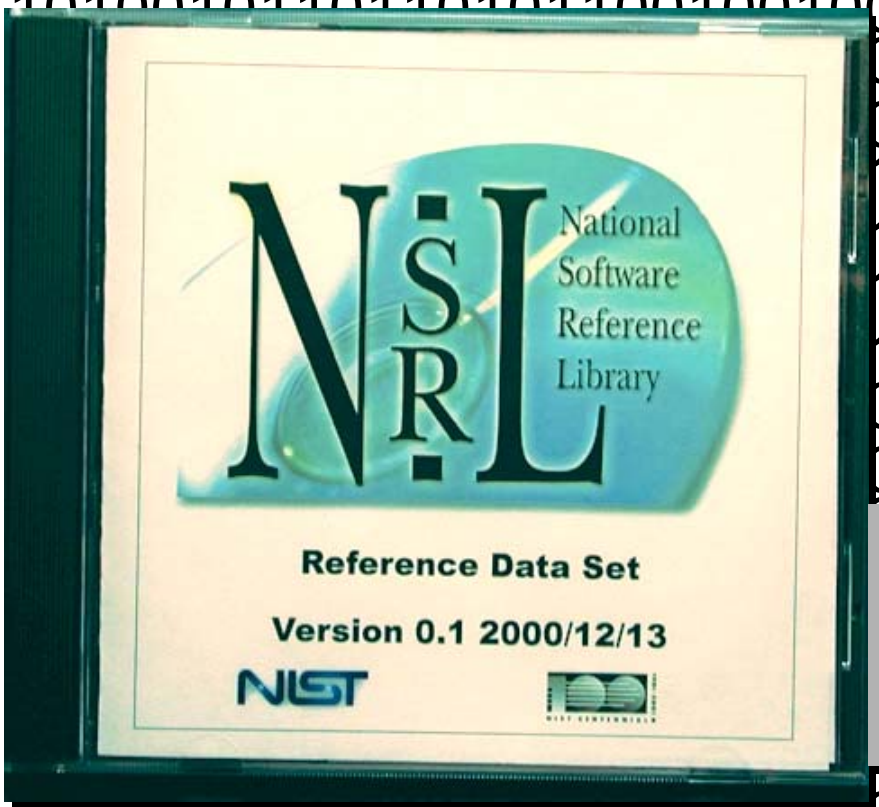
SRM to Validate Hard Drive Imaging Software

44 Different Computer System Configurations

Identifies Potential Imaging Software Problems

GOAL: Ensure Validity of Criminal Evidence from Imaged Hard Drives

Forensic Sciences



Database of Hash Codes for almost 1000 COTS

Compatible with CRC32, MD4, MD5, SHA-1

Forensic Sciences

Fire Investigation

Champion:
Building & Fire Research Laboratory (BFRL)

- **Burn Pattern Recognition Study**
- **Updating Database of Materials Burn Characteristics**

Champion:
Information Technology Laboratory

- **Computer Simulations & Recreations of Fire Events**

Public Safety Communications Standards

Focus

FY2001 Budget:
$2M

Seamless Communication & Data Exchange among Agencies through:

- IT Interoperability Standardization
- Technology Evaluation and Engineering Support
- Wireless Standards
- Support & Participation in Standards Committees

Public Safety Communications Standards

Today in the U.S.:

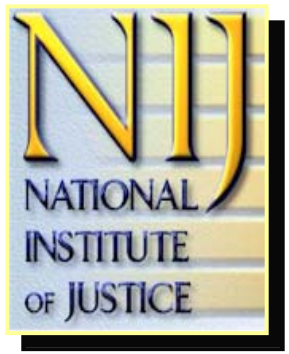
52,000+ Organizations

100s of Devices

4 Isolated RF Bands

0 Common, Nationwide Approach

Public Safety Communications Standards



Champion:

Institute for Telecommunication Sciences (ITS)
National Telecommunications and Information Administration

Advanced
Generation of
Interoperability for
Law
Enforcement

- Developing Standards for AGILE Voice, Data, Image & Video Communications
- Evaluating Commercial Devices and Services for Interim

Public Safety Communications Standards

Aim: Adopt or Modify Existing IT and Wireless Standards

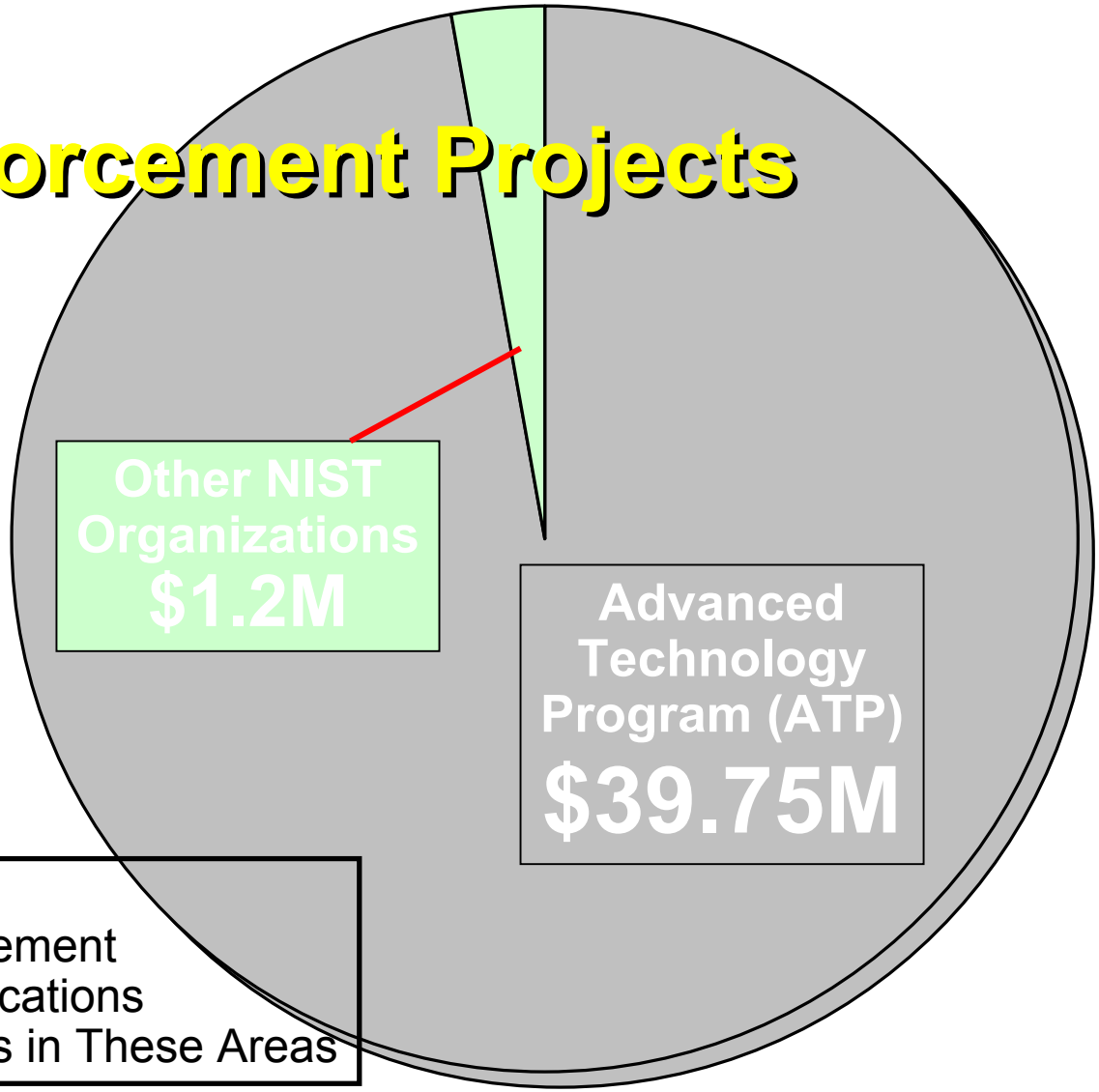
Challenge: Review 1000s of Documents

Strategy: First Define Architectural Scheme and Operational Concepts

Team Building: High-Level Committees & Technical Working Groups

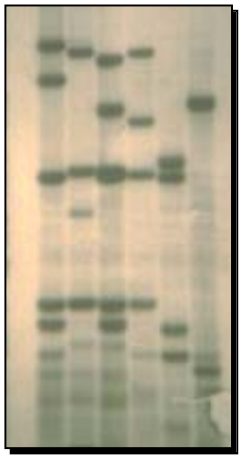
Non-OLES
Law Enforcement Projects

Total:
$40.95M



Largely Projects with
Secondary Law Enforcement
and Public Safety Applications
But No Focus on Needs in These Areas

The Advanced Technology Program (ATP)



- Eight Programs Related to DNA, including:
  - *Diagnostic "Chips"*
  - *Miniaturized Microfluidics Devices*
  - *Large Liquid-Phase DNA Probe Arrays*
- Blood-Fingerprinting System using MLSC and QDOTTm nanocrystals
- Manufacturing Process for Low-Cost, High-Performance Security Cameras
- Next-Generation Video Compression

Non-OLES NIST Projects with Law Enforcement Applications

Information Technology Laboratory (ITL)

- Key Escrow System
- Standards & Measurements for Advanced Biometric Identification (FBI Funding)

Building & Fire Research Laboratory (BFRL)

- Arson Investigation Support (BATF Funding)
- Training for Fire Researchers (BATF Funding)

Electronics and Electrical Engineering Laboratory (EEEL)

- Magneto-Resistive Imaging Methods for Authenticating Recorded Magnetic Data (FBI, NSA & NIST Funding)

Challenges

$ Ensure Basic Operating Funds from Year to Year

More Closely Monitor Developments in Public and Private Sectors

Role in National Industrial Liaison Office?

[noun] a conspicuous object (as a banner) formerly carried at the top of a pole and used to mark a rallying point, especially in battle

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http://www.eeel.nist.gov/oles